

Cryptococcus Neoformans and Other Opportunistic *Cryptococcus* Species in Pigeon Dropping in Saudi Arabia: Identification and Characterization by DNA Sequencing

Abdalla Ahmed^{*1}

Bashir Sirag¹

El-Shiekh Khidir²

Mohammed Dumyati³

Basam Sindi⁴

Mahir Alsinnari⁵

Hani Faidah¹

¹Department of Microbiology, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

²Department of Laboratory Medicine, School of Applied Medical Sciences, Umm Al-Qura University, Saudi Arabia

³Internal Medicine Resident, National Guard Health Affairs, King Abdulaziz Medical City, Jeddah, Saudi Arabia

⁴Internal Medicine Resident, King Fahad Armed Forces Hospital, Jeddah, Saudi Arabia

⁵Anesthesia Resident, Al Noor Specialist Hospital, Makkah, Saudi Arabia

Abstract

The prevalent variants of *Cryptococcus neoformans*, and other *Cryptococcus* species in pigeon excreta in Western Region of Saudi Arabia. Ninety pigeon dropping samples were directly in Niger Seed agar, and suspected colonies sequenced using Illumina MiSeq. Species identification was determined using sequence reads mapping to a reference genomes of the two *C. neoformans* variants. In addition, sequence reads were identified using KmerFinder tool. Internal Transcribed Spacer 2 in the rDNA was also used for fungal barcoding of none *Cryptococcus neoformans* species using two fungal identification databases. Phylogeny was studied using CSI Phylogeny (Center for Genomic Epidemiology, Denmark). The *Cryptococcus neoformans* var. *grubii* mitochondrion and chromosome 1 reference sequences (accession number NC_004336.1 and CP022321.1, respectively) were used for sequences comparison and variants calling. Fifteen *Cryptococcus* isolates were obtained, 11 were identified as *Cryptococcus neoformans* variety *grubii* and 4 were found to be other opportunistic *cryptococcus* species. Phylogeny analysis of *Cryptococcus neoformans* variety *grubii* isolates showed high degree of similarity between the *Cryptococcus neoformans* isolates especially at the mitochondrial genome level. This study supports the fact that pathogenic and opportunistic *Cryptococcus* species are prevalent in domestic bird excreta which is an easy source of infection in susceptible population.

Article Information

Article Type: Research

Article Number: JAMBR 147

Received Date: 12 July, 2021

Accepted Date: 30 July, 2021

Published Date: 06 August, 2021

***Corresponding author:** Abdalla Ahmed, Microbiology, College of Medicine, Umm Al-Qura University, 21955 Makkah, Saudi Arabia. Tel: +966543031577; Email: aoahmed@gmail.com

Citation: Ahmed A, Sirag B, Khidir ES, Dumyati M, Sindi B, Alsinnari M, Faidah H (2021) *Cryptococcus Neoformans* and Other Opportunistic *Cryptococcus* Species in Pigeon Dropping in Saudi Arabia: Identification and Characterization by DNA Sequencing. J Appl Microb Res. Vol: 4 Issu: 2 (01-01).

Copyright: © 2021 Ahmed A et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.